DOCUMENT RESUME

ED 418 736 JC 980 177

AUTHOR	Bragg, Debra D.
TITLE	How Students Assess Their School-to-Work Opportunities.
PUB DATE	1998-04-00
NOTE	30p.; Paper presented at the Annual Meeting of the Council for the Study of Community Colleges (Miami Beach, FL, April 24-25, 1998).
PUB TYPE	Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Case Studies; Community Colleges; *Education Work Relationship; *Educational Attitudes; High School Students; High Schools; Program Effectiveness; *Student Attitudes; *Student Characteristics; *Student Educational Objectives; Student Surveys; Two Year College Students; Two Year Colleges

ABSTRACT

Since the passage of the Carl D. Perkins legislation in 1990 and the School to Work Opportunities Act (STWOA) in 1994, considerable funds and effort have been put into tech prep and school-to-work programs. To determine the extent to which these programs actually improve educational opportunities for students, case studies were undertaken of six sites in different states, each employing a different STWOA model. Tech prep and STWOA policies and documents at the sites were reviewed and site visits were conducted. During the visits, administrators, teachers, counselors, parents, employers, and approximately 150 secondary and post-secondary students were interviewed. In addition, all tech prep and STWOA students at the sites were surveyed regarding their educational goals, perceptions related to school- and work-based learning, and personal characteristics, with completed surveys being received from 124 students. In general, the study found that the students did make definite plans for the future, but that they often did not fully understand those plans. In addition, over 80% of the students felt that their academic courses applied to the real world. Finally, while 80% of the high school and 88% of the community college students worked, few of the students indicated that school officials had helped them find a job. Descriptions of the six case study sites are included. (Contains 31 references.) (BCY)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 418 736

HOW STUDENTS ASSESS THEIR SCHOOL-TO-WORK OPPORTUNITIES

Debra D. Bragg, Ph.D.
Associate Professor
Community College Leadership
University of Illinois at Urbana-Champaign
Room 347 Education Building
1310 South Sixth Street
Champaign, IL 61820
TEL 217/333-0807
FAX 217/244-5632
EML d-bragg1@uiuc.edu

Paper presentation given at the
Council for the Study of Community Colleges Annual Meeting
on April 24-25, 1998 in Miami Beach, FL

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
D. Bragg
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

JC 980 177

INTRODUCTION

Starting over a decade ago, the bellwether report, *A Nation at Risk* (National Commission on Excellence in Education, 1983), generated waves of educational reform, concentrating its focus on academic education (math, science and English/communications). Later, the federal Carl D. Perkins legislation of 1990 (commonly known as Perkins II) advocted changes in vocational-technical education, authorizing tech prep in Title IIIE, the Tech Prep Education Act. More recently, the School To Work Opportunities Act (STWOA) of 1994 was passed, promising that all students should experience a more integrated and rigorous academic and vocational curriculum at the secondary level that is linked strategically to postsecondary education and work. STWOA charges schools (secondary and postsecondary) with creating partnerships with businesses so students can transition easily from a school-based educational environment to a work-based one, preparing them for an increasingly competitive workplace of the 21st century. Recommended components of STWOA curriculum are numerous, but a fundamental element is formal articulation between secondary and postsecondary education. Such approaches as tech prep (technical preparation), career academies, and youth apprenticeships are advocated as promising practices (Bragg, 1995; Grubb, 1995; Grubb et al., 1996; Jennings, 1995; Resnick & Wirt, 1996; Stern et al., 1995). Of these, tech prep is probably the most established and widely known since it proceeded STWOA by four years with its own federal endorsement and funding.

Though tech prep and STWOA are not equivalent in scope and scale (since STWOA requires additional components and is intended for all students), there are strong parallels. Findings from the national evaluation of tech prep implementation sponsored by the U.S. Department of Education/Office of Adult and Vocational Education (USDE/OVAE) indicate that early developments with tech prep have laid the groundwork for STWOA in many localities (Silverberg, 1996a & 1996b). Some regions have developed the secondary-to-postsecondary aspect of STWOA based on articulation agreements put into place when tech prep programs were introduced in the early 1990s, and sometime earlier. Particularly in the area of school-based learning, tech prep has been credited with creating career clusters (or ladders), applied academics courses and related career development activities. Recent expansions of private sector and labor partnerships have been evident in many tech prep consortia, and these new relationships have been useful in formulating new local STWOA governance structures. With respect to various reciprocal relationships between tech prep and STWOA, "STWOA promotes a system of integrated school-based and work-based programs that require substantial commitment from business, industry, and labor. Many consortia view tech prep as a natural foundation for the school-based component of school-to-work systems and appear to have solicited some or additional employer and labor involvement" (Silverberg, 1996a, p. 18).

Though limited, some evaluation has been conducted to document the implementation of key components of tech prep and STWOA at the national level (Boesel, Rahn, & Deich, 1994; Layton & Bragg, 1992; Bragg, Layton, & Hammons, 1994; Hershey, Silverberg, & Owens, 1995; Silverberg & Hershey, 1995; Silverberg, 1996a; Silverberg, 1996b). Typically, these

evaluations focus on the extent of implementation of "essential elements" of the federal bills. This is due partly to the relatively early stage of implementation of these programs, but it also has to do with the shear complexity of evaluating educational initiatives with the kinds of comprehensive goals and intended outcomes as tech prep and STWOA. At the federal level, Mathematica Policy Research, Inc., under sponsorship by USDE/OVAE, has had primary responsibility for evaluating both tech prep and STWOA, using survey research methods supplemented with field visits to selected sites. At the state level, fewer than a dozen states have conducted comprehensive evaluations that include student outcomes assessments (Bragg, 1997; Layton & Bragg, 1992). Instead, most state-level evaluations have paid attention to legislative compliance and accountability concerns, which sometimes conflict with efforts to answer deeper questions about program effectiveness and impact (Bragg et al., 1994). Given the state of evaluation in the field, it is not surprising that little information exists about students who are the intended participants in and beneficiaries of tech prep and STWOA programs. When considering almost any reform linked to the "new vocationalism", Stern et al. (1995) argues almost no attention has been paid to the students themselves. More research is needed to understand how tech prep and STWOA programs impact student educational experiences and outcomes.

THE PURPOSE OF THE STUDY

Since passage of the Perkins II legislation, the federal investment in tech prep education has been substantial—approaching $1 billion dollars, and this figure does not include the multi-million dollar federal investment in the School-To-Work Opportunities Act (STWOA). Just considering the magnitude of the federal commitment to tech prep and STWOA, it is essential that we gain greater understanding of how tech prep and STWOA programs affect students. Do these programs offer improved educational opportunities for students? Are they an enhancement over existing educational policies and practices? To begin to answer these complex questions, research was needed to enrich and deepen our understanding of students' educational experiences and outcomes associated with participation in programs that combine tech prep and STWOA reforms. Little information exists about students who participate in hybrid tech prep/STWOA programs, one of the most common strategies of school-to-work reform being attempted today. Whereas more and more attention is paid to local and state compliance in setting up these programs according to legislative requirements, almost no attention is paid to the students themselves, particularly at the postsecondary level. Who are the students who participate in tech prep/STWOA? Why do they participate? What are their goals for high school and college (two- or four-year)? What aspirations do they have for further work and study? What outcomes can be attributed to student participation to tech prep/STWOA? How do students perceive of their educational experiences and outcomes?

METHODS

To provide a context for this paper, a summary of the methodology utilized in the national policy study begins this section. Then the specific data collection methods, procedures and analysis techniques pertaining to the student data are presented.

BEST COPY AVAILABLE

National Policy Study Methods

Individual and cross-comparative case study methodologies were employed by a team of researchers conducting fieldwork in six states beginning early in the 1996-1997 academic year and continuing to the present. The six states were selected purposively with input from an expert panel's insights and opinions concerning states and local sites that could provide an interesting mix of tech prep/STWOA policies and practices. Along with the expert panel, we conducted a thorough document review of the literature and reviewed our own files, records and other pertinent information from previous investigations of policies and practices (see, for example, Bragg, 1997 and Bragg et al., 1997).

Ultimately, the six sites were chosen utilizing several carefully devised criteria. First and foremost, each of the selected sites (state and one local with a state) represented a distinct STWOA model such as youth apprenticeship or career academy, in addition to a particular tech prep (articulation) approach (e.g., 4+2 or 2+2+2) (Bragg, 1995; Hershey, Silverberg, & Owens, 1995). [Because of this focus, tech prep/STWOA is used throughout the rest of the paper to describe the overall (hybrid) focus of each selected program.] Second, besides the distinctiveness of each site's curricular configuration, each site was recognized by state personnel and peer institutions as experienced or "mature" implementers of tech prep/STWOA. Third, the sites had begun the process of measuring student enrollment and outcomes, providing a baseline of information about student performance before, within and after program participation, and these local evaluations were consistent with larger state-level evaluation efforts. Fourth, geographic representation was evident in the overall sample to ensure that a mix of rural, urban, and suburban communities were included in the study. As such, the six selected sites are geographically distributed throughout the United States. Two are located in rural/small towns, three are headquartered in urban/large metropolitan areas, and one is located in a suburb.[1]

The data collection for the larger policy study began with introductory meetings with representatives in each state to gain an understanding of how state and local tech prep/STWOA policies and practices were being conceptualized and implemented. Tech prep and STWOA-related legislation, plans and documents (e.g., agendas, board minutes, brochures, newsletters, grant applications, end-of-year reports) were reviewed and analyzed for common but also unique themes and patterns. Then, two field visits were conducted with the selected local site within each state during the 1996-97 academic year and twice again during the 1997-98 academic year. During each visit, in-depth personal interviews were conducted with high school, community college and sometimes four-year college personnel (administrators, teachers, and counselors) and other key informants (students, parents, and employers). The interviews were designed to provide an in-depth and thorough understanding of how various goals, programs, and implementation strategies were progressing and to uncover specific plans and expectations for tech prep/STWOA students.

---

[1] Rural and urban sites dominate the sample because of the priority placed on serving these regions by the federal tech prep and STWOA legislation. In fact, two of the urban/large metropolitan sites encompass such a large geographic region that they include a sizable number of suburban and rural schools.

Data Collection Involving Students

During the field visits conducted during the 1996-1997 academic year, semi-structured interviews were conducted with high school and community college students at each site. During these interviews, many facets of the tech prep/STWOA experience were explored, using the following types of questions:

- How and why did you decide to participate in a tech prep/STWOA program?
- How satisfied are you with your high school and/or collegiate experiences?
- What plans have you made (did you make) to transition from high school to college?
- What progress have you made toward completing your preferred credential(s), and what has enhanced and/or impeded your progress?
- What are your perceptions of the relationships between school-based and work-based learning?
- What is your understanding of the relationships between tech prep, school-to-work and other educational reforms in your school and/or college?
- What are the most important outcomes (benefits) associated with your participation in tech prep/STWOA?
- What outcomes (benefits) have you attained already or do you feel certain you will attain?

The interviews were conducted with a cross-section of students who had already matriculated or who planned to matriculate from high school to college. These students were selected purposively, usually because they were thought to have had a typical tech prep/STWOA experience. A few of the students were considered to be "model" students, usually because of their enthusiasm for tech prep/STWOA or the perception that they had been "turned around" by the program, but not because they excelled academically. In interviewing students, we found most, if not all, spoke openly and honestly about their experiences in the programs; however, postsecondary students were more articulate, reflective and thoughtful in their responses than secondary students, making these interviews especially valuable.

Though not all students selected for interviewing were participants in a tech prep/STWOA program, the vast majority were. The few non-participants chosen for interviews were thought to provide valuable alternative perspectives on local students' broader educational experiences. Many of these non-participants were "college-bound" or "transfer" students, and they had a strong preference for pursuing a four-year college or university education. A few were vocational students who had elected not to participate in tech prep/STWOA programs. In total, about 150 students were interviewed, divided evenly between the secondary and postsecondary levels.

Though some of the interviews were conducted one on one, most occurred in small groups. Regardless of the number, semi-structured interview procedures outlined by Patton

(1980) were used, keeping the study's overall objectives, questions, and major themes in mind. Most interviews lasted from 40 to 60 minutes, depending upon the number of students involved. One-on-one interviews were completed more quickly than group interviews because of our ability to gather the information more directly and efficiently.

In addition, all tech prep/STWOA students completed a four-page questionnaire to supplement the interview data. In total, 124 students completed the paper/pencil survey: 67 secondary students and 57 postsecondary students. The questionnaire was organized into four sections: a) goals and aspirations for further education and career, b) experiences with and perceptions toward school-based learning, c) experiences with and perceptions toward work-based learning and its connections to school, and d) student demographics.

In terms of data analysis, a content analysis was conducted of the personal interview (qualitative) data using field notes and transcripts. The data were analyzed to unveil unique or pervasive themes and patterns across all participants (Merriam, 1988). Data provided by secondary and postsecondary students were noted and coded separately to enhance our ability to compare and interpret results. In similar fashion, questionnaire data were analyzed in the aggregate. Later, comparisons were made between the groups of secondary and postsecondary respondents using simple descriptive statistics (e.g., frequency distributions and measures of central tendency). Since the sample size was small for each site, few comparisons of responses were made between sites.

FINDINGS AND CONCLUSIONS

Brief descriptions of the six Tech Prep/STWOA sites are presented to provide a context for the reader's interpretation of results pertaining to the students. Key program elements and the student populations served by each site are shown in Figure 1, using pseudonyms to protect the anonymity of the research sites. Results pertaining to students are organized according to the major sections of the survey instrument. First, respondent demographics are presented. Next, student aspirations concerning college and careers are described. Third, students' experiences with, perceptions of and attitudes toward school-based learning are discussed. Finally, the nature of students' work and work-based learning experiences are portrayed, based on the perceptions of the student participants themselves.

Site Profiles

The Heartland Education-To-Careers Partnership

The Heartland Education-To-Careers Partnership is headquartered at a community college in a small town in the Midwest. The consortium is located in a rural region serving twelve high schools, a regional vocational center, and the comprehensive community college. Here, the tech prep and youth apprenticeship models co-mingle to form the curricular basis for this partnership. The program is directed at grades 9-14 creating what is known as a 4+2 arrangement, extending from the freshman to senior year in high school and two years at the community college. The vocational curriculum is extensive in that nearly all existing vocational-technical programs are considered part of tech prep/STWOA. Thirty course sequences have been

developed extending from the 9th grade to the associate of applied science degree; twenty-five community college courses have been articulated so students can receive college credit at the high school level. Local businesses are heavily involved in local curriculum activities as is evidenced by over 70 business and labor partners offering 23 worksites for youth apprenticeships in areas such as manufacturing, accounting, banking, health occupations, and consumer management.

Besides the hybrid tech prep/youth apprenticeship approach, tech prep is offered without the youth apprenticeship option in ten high schools in the region. Besides their classroom experiences, all 9th grade students have the opportunity to shadow an employee who is working in an area of occupational interest. During the 1996-97 academic year, over 700 students and 80 businesses took part in job shadowing. The partnership takes pride in its student leadership academy that focuses on preparing student leaders to market themselves for successful employment, but also to sell the concept of tech prep/STWOA to other (usually younger) students. Mentoring by fellow students and faculty, particularly at the community college level, is another key feature of this partnership.

The Heartland Partnership uses the definition of a tech prep student devised by the state to define its local student population. The state definition says, "A tech prep student is one who has made a conscious decision to follow a clearly defined sequence of courses to prepare for employment in a tech prep occupation. A conscious decision means the student has declared tech prep as a major and has an Individualized Career Plan (ICP) indicating a tech prep occupation is his/her goal." According to the state "A tech prep sequence consists of academic and technical courses taught during the two years of secondary school preceding graduation and at a minimum (1) two years of postsecondary education leading to an Associate of Applied Science degree or (2) an apprenticeship of at least two years following high school. The [curriculum] sequence must include integrated academic and technical content, workplace skills, and instruction delivered both at the worksite and in the school/college setting. Some programs may also articulate to a four-year baccalaureate degree."

Heartland's tech prep/STWOA curriculum is designed to meet the state's high school graduation requirements, but not necessarily to exceed them. Only in the tech prep/youth apprenticeship program is a selective admission process used, mostly involving employer interviews rather than academic assessments. All other students elect to participate in the 4+2 core curriculum and most of these would otherwise be considered part of the general education population, though a few college prep students consider themselves to be participants. Similarly to most other sites studied, the Heartland Partnership makes no special effort to exclude students since tech prep/STWOA is considered a viable option for all students even though those considered part of the "neglected majority" (Parnell, 1985) are thought to be the most likely to participate and benefit.

During the past three academic years (1997-1995), just over 10 percent of 4,000 high school graduates were considered participants in Heartland's tech prep/STWOA program. Only a very small percentage of these, approximately 40, participated in youth apprenticeships.

BEST COPY AVAILABLE

The Southern Tech Prep/School-To-Career Partnership

The Southern Partnership is headquartered at a community college in a southwestern state. Historically, this college has defined its mission as primarily transfer, considering itself a junior college, and offering only a limited number of vocational-technical courses. Evidence of its "junior" status, the college's physical location is tangent to a branch of a public-funded university, and students are encouraged to flow back and forth between the two campuses. Since passage of the tech prep and STWOA laws the college has made deliberate attempts to increase vocational-technical curriculum offerings and student enrollments, but still maintain a commitment to the transfer aspects of its overall mission. Consequently, the local university is an active member of the Southern Partnership, offering the last two years of collegiate study toward the baccalaureate degree in selected program areas.

Like many other partnerships in this state, the region served by the Southern Partnership is rural and expansive, encompassing seven counties and over 6,000 square miles. Nearly 20 high schools or independent school districts are involved directly and another 20 send students to the local community college from outside the partnership's region. Utilizing the curriculum structure required by the state, this partnership has defined seven tech prep pathways that are formally approved by the designated state agencies. These 4+2 pathways are offered in such areas as electronics/instrumentation advanced technology, criminal justice, associate degree nursing, and microcomputer technology. Applied academics courses/units are offered in area high schools in communications and workplace readiness; however, articulated credit is the highlight of this partnership. Over 200 high school vocational-technical courses are approved for college credit.

Since passage of STWOA, a concerted effort has been made to provide work-based learning opportunities in the form of mentoring, job shadowing and cooperative education. In addition, competency profiles have been developed to help teachers and employers rate the skill performance of secondary students. These profiles are maintained in a student's portfolio, making the information readily available to future employers and staff at the next educational level.

In the Southern Partnership, no special admission criteria or selection procedures are imposed. All high school students who are "interested in having a rewarding career in a quality workforce" are eligible. Key elements of the 4+2 core curriculum are: a) a six-year plan of academic and technical study, b) emphasis on teaching methods that meet the needs of all students, c) one or more formal articulation agreements between postsecondary associate degree-granting institutions (or apprenticeship programs) and school districts, and d) a support system of comprehensive career guidance and counseling, staff development, and student support services (Brown, 1997). State-approved tech prep four-year high school graduation plans require more rigorous academic requirements than a vocational endorsement, but not as much as college prep. A sizable proportion of high school graduates are considered tech prep/STWOA participants in this partnership. During the 1994-95 through 1996-97 academic year, 4,000 graduates participated in a tech prep/STWOA program, accounting for over 25% of the entire population of

15,000 high school graduates. In the fall of 1996, almost 650 students were engaged in tech prep/STWOA at the community college level.

The Midwest Tech Prep Consortium

The Midwest Consortium is headquartered in an urban community college in a Midwest industrial state. Though this consortium is centered in a large city, the vast geographic region served takes in suburban and rural vicinities. Besides the community college, eight vocational education planning districts involving 64 comprehensive high schools are part of the consortium. Over 100 businesses, mostly manufacturers, automotive dealers, hospitals and clinics, are engaged. Five vocational-technical areas are the focus of the program and these were chosen because labor market data suggest they are high-skill, high-wage occupations in demand locally. The five areas are allied health technologies, automotive technology, computer support technology, electronic engineering technologies, and industrial engineering technology.

The core curriculum is a 2+2 advanced skills configuration, involving applied and traditional academic and vocational courses. The 2+2 curriculum utilizes a career academy [or school-within-a-school (SWIS) model] and a cohort group of participants is determined on a selective admission basis. However, the criteria used to select students are not overly rigorous since to get into the program a student must have passed algebra 1 with a C and be on track for high school graduation. Once admitted students are expected to meet the state's college prep graduation requirements. To ease financial burdens that can disrupt transition from the secondary to the postsecondary level, the consortium awards scholarships allowing students to matriculate to the community college and continue in more advanced courses there.

In addition, the Midwest Consortium makes work-based learning opportunities available to students via job shadowing, cooperative education, and a limited number of youth apprenticeships. This later approach is available to area high school students in either automotive technology or electronic engineering technology. In addition, written agreements exist between the community college and a private university in the city, offering students the opportunity to complete the baccalaureate degree by creating a 2+2+2 arrangement, sometimes on a scholarship basis.

Since the Midwest Consortium employs a selective admission procedure, a more limited number of students are engaged in tech prep/STWOA than in some of the other sites in this study. In fact, the number of participants in tech prep/STWOA is extremely limited compared to the overall population of high school graduates. From 1994-95 to 1996-97, there were only about 300 tech prep/STWOA graduates of 18,000, accounting for only about 2% of all high school graduates in the region.

The Northwest Regional Education Consortium

The Northwest Consortium is one of the oldest in the nation (starting a dozen years ago) and it is headquartered at a community college in a northwestern state. This consortium serves eight high schools in seven school districts as well as the community college. To date, 82 formal articulation agreements have been developed, covering 17 vocational-technical strands such as

accounting, integrated natural resources, computer applications, early childhood education, engineering technology, allied health, hospitality/tourism, and journalism. Dual credit and/or advanced placement credits are readily available and convenient for matriculating students to access when enrolling in the community college.

In 1996-97, the consortium expanded its efforts beyond program offerings to include technical assistance to the educational partners through a federally-funded demonstration project. This initiative promotes the integration of high academic standards with industry skill standards and provides for the local development of curriculum consistent with new state certification/graduation requirements. The consortium works closely with business partners and, in turn, these partners play a key role in designing the state's new assessment for career-related learning standards.

Some of the high schools in the Northwest Consortium have moved aggressively to restructuring the curriculum and changing the learning environment. Others remain in the more traditional mode of the comprehensive high schools, emphasizing lecture-led academic courses and downplaying alternative course content and teaching strategies. One secondary school partner, Raymond High School, is developing a tech prep/STWOA initiative that emphasizes three career pathways consistent with the state's overall conception of educational reform. These three pathways are business management systems, industrial and engineering, and natural resource systems. The written goals of Raymond High's restructuring effort are: a) to assist students to achieve higher academic and career goals, b) to support them in making successful transitions to college or work, c) to assist them meeting the state's new academic standards, and d) to integrate curriculum and instruction across disciplines to better replicate real-world applications in the classroom.

The community college in the Northwest Consortium serves over 30,000 students each year, one-third of whom are graduating high school seniors from inside the district. But only some of these students earned articulated tech-prep credit in high school. During the 1994-95 through 1996-97 academic years, approximately 1,500 of 9,000 high school graduates were considered tech prep/STWOA students because of their participation in an articulated high school vocational course, accounting for 17% of all high school graduates. The vast majority of these students were in the business and management career pathway.

The Sunshine Tech Prep Consortium

This consortium is located in a large and growing metropolitan area centered in a southeastern state. The boundaries of the consortium parallel the county school district that administers the tech prep and STWOA grants for the region. This consortium designs curriculum so that students who decide to pursue a four-year college or university degree will have the academic preparation to do so. Though some students do matriculate to the four-year level, many go on to the large multi-campus community college located on four sites in the county. In total, 18 comprehensive high schools, one magnet comprehensive technical high school, and three adult vocational centers send students to this community college.

Two tech prep/STWOA courses of study extending from the freshman year in high school to postsecondary associate degree (i.e., 4+2) are offered. The first course of study encourages students to take appropriate community college preparatory courses, plus applied technical courses, and continue to the community college in an articulated program. The second is where students combine traditional college prep courses with tech prep/STWOA courses to meet the state's college prep graduation requirements. Enrollment in the latter option is growing because of the advantages offered by this sort of dual major/credential.

A comprehensive set of career options are offered in 35 different areas, categorized in nine broad occupational areas: agribusiness, business technology, diversified cooperative training, health science, family and consumer sciences, industrial/technology education, marketing, and public service. Besides curricula, this partnership emphasizes career exploration in the elementary, middle and high school levels. Some high schools, particularly the magnet high school, have developed work-based learning opportunities for students. In fact, this school has offered these kinds of alternative learning opportunities for some time since its historical mission and curricular format are conducive to current ideas about academic and vocational education and school-to-work transition.

Like others in its state, students in the Sunshine Partnership are defined by the particular course sequences they take in high school. At minimum, students must complete two levels of math at the Algebra 1 level or higher, and they must maintain grade level or above in all course work. Students must also take at least one vocational class in a coherent sequence of courses in one of the vocational-technical pathways described above. Each of these pathways offers courses that are formally articulated with the community college. Beyond participation in the courses, students should have declared themselves to be a tech prep student and they should have signed a six-year Individualized Career Plan (ICP), though these declarations are optional. In the past three academic years, the number of tech prep/STOWA high school graduates has tripled, rising from approximately 350 of 5,800 in 1994-95 to over 900 of 6,000 in 1996-97, accounting for 15% of the high school graduates in the Sunshine County secondary schools in 1996-97

The Northeast Technical College Tech Prep Initiative

The Northeast Initiative is headquartered in a large urban area in the northeast region of the U.S. Six secondary schools are partners with the technical college that takes fiscal responsibility for the tech prep grant. (The college has a part of the regions STWOA grant as well.) This particular technical college considers itself a four-year college because baccalaureate degrees are awarded, though its long history as a two-year college is still evident. Most curriculum offerings at the college still lead to the associate degree. Because of the expansive mission of the college, the tech prep/STWOA program is considered a 2+2+2 model, beginning the junior year in high school and continuing to the baccalaureate degree. The technical college has three career divisions that lead to associate and/or baccalaureate degrees in engineering technology, business and communications technology, and health and human services. These three divisions define the vocational focus of the high school tech prep/STWOA program.

Each of the secondary schools in the Northeast Initiative offers a distinctly different curriculum: one is an elite entrance-by-examination high school, another is a traditional vocational-technical high school, a third is a health professions magnet high school, a fourth is a small "New Visions" high school, and the two remaining are traditional comprehensive high schools, one of which serves a large limited English proficient (LEP) student population. At the high school level, all tech prep/STWOA students must be enrolled a career cluster, plus meet the core requirements in the applied academics curriculum (which includes being on grade level or above for high school graduation.) In addition, students must declare themselves as tech prep/STWOA participants, they should complete a four-year (2+2) plan (junior to associate degree) and they must enroll in applied academics and technical course sequences.

Indicative of the Northeast Initiative's priority for locally-developed applied academics supported by non-traditional teaching, this consortium has developed an integrated high school-level English course titled "Great Thinkers". This course was developed to respond to a probing question: "If we could remove all logistical and financial impediments, what would the 'ideal' tech-prep course look like that would help students make a seamless transition from high school to college?" (Brodsky, Newmann, Arroyo, & Fabozzi, 1997, p. 188). The short- and long-term goals of the course are different, "in the short term [the goals are] to prepare students for the freshman skills exams and, in the long term, [they are] to develop college readiness skills and work-site competencies.... The 'great thinkers' theme structure insures a high level of academic rigor, and the group projects component integrates academic and vocational skills" (p. 188).

All students enrolled in the feeder high schools are eligible to be part of the tech prep/STWOA curriculum. To date, the implementation of tech prep/STWOA curricula has been extensive in only three of the six high schools. In these schools, an extensive array of vocational-technical courses exists (and have for some time), though it would be incorrect to think these high schools focus on only low-level vocational studies. Matriculation of students from at least two of these high schools to two-year or four-year college has been impressive historically. It is not unusual for graduates of one of these high schools to place students into elite, private (even ivy) universities. In recent years, nearly 40% of graduating seniors have participated in the tech prep/STWO program in two high schools (comparable data not available on the third). In total, nearly 440 of over 4,000 students have participated in tech prep/STWOA during the 1994-95 through 1996-97 academic years, accounting for just over 10% of all high school graduates.

Student Survey Results

Finding Out About the Students. When first conceived, Parnell (1985) characterized tech prep students as the "neglected majority", referring to students right in the academic middle (25% to 75%) of the high school population. He argued that being average on measures of academic ability placed students in jeopardy of receiving their fair share of resources in comparison to either college prep or special population students. Recognizing Parnell's perspective, we sought to determine whether tech prep/STWOA students showed these characteristics. Though difficult to tell without transcripts and test scores, anecdotal evidence suggests to us that most students engaged in tech prep in the six sites represented in

this study fit Parnell's "neglected majority" description. In fact, most sites articulated Parnell's ideas (sometimes verbatim) as their guide for defining and attracting students into tech prep/STWOA programs. Local leaders recognized the necessity to provide open access to all students who want to or are qualified to participate (due partly to a legislated mandate in both the Title IIIE, Tech Prep Education Act and STWOA laws), but some also welcomed the idea of targeting tech prep/STWOA to a more needy population. Of course, we found a small contingent of students who didn't fit the "neglected majority" definition in each site. Most of these students could be considered "college-bound"; only a few were special needs students. By and large, tech prep/STWOA students fit solidly in the mainstream of the high-school population.

Of all students surveyed, more were male than female, mostly because the occupations associated with the tech prep/STWOA models (e.g., industrial, electronics and computer technologies) enrolled more males than females. At the postsecondary level, the distribution was slightly more skewed toward males than at the secondary. Of all high school students, 55% were male; 45% were female. At the postsecondary level, 58% were male and 43% were female.

In terms of race/ethnicity, secondary students were more racially diverse than their postsecondary counterparts. At the high school level, 74% of the students were White, 8% were Mexican American; 6% were Asian American, and 12% were African American. By comparison, 84% were White, 4% were Mexican American, 4% were Asian American, and 8% were African American at the postsecondary level. Demographics varied widely by site, ranging from a rural site where nearly all were White to an urban site where the vast majority of students were Mexican-American or African-American.

Since the sample was not drawn randomly, nor were the data longitudinal in the sense that the same students were tracked from the secondary to the postsecondary level, generalizations about the overall demographic composition of tech prep/STWOA students in the six sites cannot be made. However, these demographic data are helpful in understanding the sample for this study.

Sorting Out College and Career Plans. A consistently stated goal of tech prep/STWOA programs is to assist students to clarify their goals for college and careers. In a coordinated fashion, tech prep/STWOA programs are designed to help students test both the academic and occupational waters. The programs should be designed to offer increasingly more rigorous academic courses that are linked to or integrated with technical courses, sometimes along with work-based learning experiences that are realistic of the workplace. By progressing through a coherent sequence of courses and related learning experiences, students are thought to be better prepared to assume future adult roles (Parnell, 1985).

By looking at students' plans for the future, we hoped to gain a better understanding of how they think about future college and careers. Did tech prep/STWOA contribute to students' college and career planning? Did it enhance their awareness of various options? In response to these kinds of questions, we found that high school tech prep/STWOA students did indeed make plans for the future, often in close alignment with the goals of tech prep/STWOA of a two-year

BEST COPY AVAILABLE

college combined with work. What seemed far less certain, however, was whether they understood what they were planning for and what their lives would be like when they attempted to fulfill those plans. Evidently, many tech prep/STWOA students felt ready to take on the world, but most had very naive ideas about what the world is really all about.

Most high school tech prep/STWOA students planned to go to a two-year (82%) or four-year (70%) college, plus work part-time (58%) or full-time (28%) (see Table 1). Options such as job training (32%) or military service (9%) sparked little interest. Compared to the college aspirations of high school students generally (Gray & Herr, 1995), the level of interest in two-year college education was particularly high, indicating the goals of tech prep/STWOA had been spelled out clearly and convincingly. Yet, some high school students preferred to skip the community college altogether and continue their education at the four-year level. Others planned to go to the community college, but enroll in a transfer program. Two reasons were given for this decision. First, students had lost interest in tech prep/STWOA and/or gained an appreciation for the liberal arts curriculum, encouraging them to pursue a transfer major. Some remained interested in tech prep/STWOA but they didn't want to take a chance their courses would not transfer. These students decided to pursue an academic course of study, supplementing it with a few elective vocational-technical courses. Unfortunately, limited data exist to track students' patterns of transition from high school to either two-year or four-year college, but our future research will enable us to examine these important questions.

In our interviews with students, we had the sense most students struggled with college and career decisions. Students realized these were important decisions and they were searching for help in making them wisely. In that regard, it is enlightening to know few students reported creating an Individualized Career Plan (ICP) under the guidance of a career counselor or teacher/mentor. This is an interesting finding since ICPs are a recommended tool of STWOA and many states and localities mandate their use. Other kinds of career guidance and selection activities did not stand out in students' minds either. Several mentioned going to career fairs, filling out career inventories, or doing job shadowing, but these activities were peripheral to serious decision making about college and career. When it came right down to it, family members were the most influential by far (see Table 2). Time and time again students spoke of becoming a teacher, auto mechanic, police officer, technician, or nurse because someone in their family did that type of work and encouraged them to consider it for their own.

The vast majority of community college tech prep/STWOA students planned to go to a four-year college or university while continuing to hold down a part-time or even full-time job (see Table 1 again). For these students, aspirations for more college education were not dampened or diminished by their initial enrollment in a community college. To the contrary, their aspirations continued to rise once students were introduced to the collegiate environment. Such findings cause one to question the notion of "cooling out" so often touted in the literature (Brint & Karabel, 1989; Clark, 1960, 1980; Dougherty, 1994), at least with respect to newer tech prep/STWOA programs. With school officials playing so minimal role in future planning, how could counselors or others influence students to downshift their aspirations as some scholars have theorized? (See Table 2.) If anything, our data point to a "warming up" effect as students realize a four-year college education is within their reach. Similar conclusions are drawn by

Grubb (1996) who hypothesized that "cooling out may co-exist with 'heating up,' or educational advancement" (p. 64), particularly for students who otherwise would not have continued their education immediately after high school due to financial and accessibility concerns. Indeed, students engaged in tech prep/STWOA often find themselves in these circumstances.

Finally, in examining students' plans for college and career it is important to note that more students who enrolled in postsecondary education reported feeling prepared to undertake future plans and confidence about reaching ultimate career goals than their high school counterparts (see Table 3). The difference between the confidence level of the high school and community college groups was particularly evident—56% of the community college students indicated being very or extremely confident in reaching career goals compared to only 28% of the high school students. Yet, this finding seemed counter to another in the study: One-third of the community college students said they were undecided about their future college and career plans compared to only 11% of high school students. Apparently, feeling prepared and confident may not be associated with knowing exactly how to achieve future goals. Why this phenomenon seems more evident for community college than high school students is unknown, except to speculate that high school students may underestimate the opportunities available to them, having had limited experiences to draw upon. In contrast, community college students may have a better understanding of their options, but not know exactly how to achieve them while balancing their complex work, family, and school lives.

Searching for Meaning in School-Based Learning. School-based (classroom) learning is a critical part of most students' educational experiences. Some models place more emphasis on learning outside the classroom than inside such as youth apprenticeships; however, tech prep typically focuses more intensively on learning inside than outside the schoolhouse. For this reason, tech prep/STWOA is sometimes advocated as a means of developing and sustaining school-based learning (Harkin et al., 1996; Silverberg, 1996). Central to the school-based emphasis of tech prep/STWOA is an emphasis on raising academic standards through the reinforcement of increasingly more rigorous academic course work in math, science and English/communications. Sometimes this is done using alternative teaching strategies such as cooperative learning and thematic- or project-based instruction, but often it is accomplished using contextual or applied academics curricula. In fact, applied academics or contextual learning is so central to tech prep that local leaders consider it as an essential element (Bragg et al., 1997).

To begin to get a better understanding of students' school-based learning experiences, we asked them to provide a self report (verbally and in writing) of their highest level academic math, science, English/communications, and vocational-technical courses, along with the grades received in these courses. Missing or erroneous data foiled our attempt to analyze students' grades, but we were able to get a glimpse into their course-taking patterns since most did report the highest level courses they had taken in each subject area. Of all results pertaining to course-taking, those associated with mathematics were the most illuminating for at least two reasons. First, there is a high level of consensus about the appropriate sequencing of math courses from low to high complexity, so knowing a student's highest math class provides a good indication of what courses were completed beforehand. Second, math is a good predictor of ultimate

academic accomplishment, with higher math classes associated with higher levels of college and career attainment (Wilson & Rossman, 1993).[2] Recognizing this, it is useful to look at the math courses taken by tech prep/STWOA students.

Results show 55% of the tech prep/STWOA students had completed mathematics courses at the Algebra II, Advanced Algebra, or at an even higher level (i.e., trigonometry, pre-calculus, or calculus). In fact, 36% of those studied reported taking a trigonometry, pre-calculus, or calculus course, either at the high school or community college level. Only 7% of the sample had taken basic, applied, integrated or business math as their highest math class and nearly all these students were high school freshman or sophomores, giving them ample time to continue to higher levels. Indeed, if the course-taking patterns of more advanced students are any indication, most students will advance to higher levels of mathematics. These are important findings because they show selected tech prep/STWOA students are advancing into higher levels of academics. According to Wilson & Rossman (1993), advanced mathematics courses are very rare for students who also take vocational-technical courses.

In fact, tech prep/STWOA students not only took advanced academics courses, but many said they enjoyed them and planned to take more. About an equal proportion of students identified each of the three academic subjects of math, science and English/communications as their favorite. Common themes arose when students were asked about their favorite subject. Most said it was fun, interesting, enjoyable, and challenging; however, unique responses characterized each academic subject. Math lovers appreciated the underlying logic and structure of mathematics evident in the following comments: "I easily relate to logic", "It is like a game or puzzle", "I like math and the way you figure out equations", and "[I like the] systematic way of solving problems". Students who favored English/communications pointed to a special relationship with an English teacher and how s/he helped them, particularly with writing, sometimes valuing learning about technical writing for the workplace. A few students gave English/communications as their favorite because of a love for reading. Illustrating this perspective, a student wrote, "I love to read. It lets my imagination blossom." Finally, a common theme among those who chose science as their favorite was recognizing that it helped them "learn new things about the world" or "everyday life". Science lovers often mentioned liking hands-on, project-based, and applied learning and they particularly valued learning about the relationships between science and vocational-technical subjects.

When asked about their favorite vocational-technical subject, students' interests were diverse, paralleling their plans to seek careers in such wide-ranging fields as automotive technology, child care, manufacturing, health, business, legal studies, graphics design, travel, agri-business, consumer management, welding, electronics, computers, microcomputers, industrial engineering technology, or telecommunications. Even though students' interests were highly diverse, their reasons for favoring a particular subject were quite consistent. Students said vocational education was interesting and fun because it allowed them to become personally

[2] When reviewing these findings, it is important to recognize that students participating in this study were still enrolled in high school or college, so further course taking in any subject including math was possible. Over 75% of those sampled were at the senior level of high school or above, so these data are valuable in showing what students are likely to achieve, at least by the advanced high school level.

(often physically) engaged with the subject. Most students mentioned appreciating the opportunity to participate in "active, hands-on" learning. Often students responded to our question about their favorite vocational subject by saying, "I like to work with X" where X is a child, adult, car, computer, or other animate or inanimate object. Seeing how something works or being instrumental to making something work was very important to tech prep/STWOA students. Many also mentioned the importance of taking vocational courses to help them focus on future career plans.

Students also gave their perceptions of high school or community college classes in terms of their relevance and applicability to the "real world" (see Table 4). On these points, both high school and community college students gave high marks. Over 80% indicated their academic teachers applied course material to "real world" problems. And from 80% to over 90% of each group indicated their classes made them think about things that were important to them, gave them confidence about applying what they had learned, and gave them adequate preparation to pursue different options after high school or college. The vast majority disagreed that their classes were boring, though a sizable percentage of high school students (37%) agreed or strongly agreed with this statement. Only 19% of the community college students did so.

Contrasting these results, tech prep/STWOA students were much less certain they had an influence on what was being taught in their high school or college (see Table 4 again). In fact, 40% of high school and community college students disagreed or strongly disagreed that they had such influence. A similar percentage of high school students disagreed with the statement that "most people in this school are interested in my success". Even more alarming, 81% of community college students either disagreed or strongly disagreed with this statement. Such findings point to serious concerns about students' levels of involvement in the educational process and their interactions with peers and faculty, particularly at the postsecondary level. At that level, students are thrust into a much less structured learning environment than high school. Often for the first time, they are expected to manage their own learning.

Reflecting on their high school experiences, students were cognizant of the disparity between the expectations of high school teachers and those in college. Without exception, community college teachers were viewed as far more demanding than high school teachers, but much less explicit about how the students should learn. Some college students expressed concern and even some bitterness about their lack of preparedness for college. Trying to understand, one student asked the hard question, "why didn't my high school teachers expect more of me? (We didn't ask by wondered, "why didn't you expect more of yourself"?)

Our interviews with tech prep/STWOA students supported these findings, suggesting students knowingly disengage from high school or community college if they feel the environment is not conducive to their learning or personal well-being. They may continue to go to class (for awhile anyway), but they often have few other meaningful connections with college personnel or peers. When this occurs, when academic and social integration breaks down, students often leave school. Tinto (1996) found that a lack of congruence (poor quality of interaction between an individual and members of the college) and isolation (absence of interaction between an individual and members of the college) are two of the best predictors of

non-persistence. He notes, "the absence of faculty contact undermines student involvement in the learning process and thereby diminishes student growth" (p. 101).

For some students, the obstacles to participating in college are enormous. Attrition is evident in tech prep/STWOA programs, as it is for many community college programs. In our study, attrition was most problematic during the first semester of enrollment, and this is consistent with community college attrition generally (Upcraft & Gardner, 1989). For some students, the rigors of college-level course work created academic problems and extreme personal stress. For these students, the potential of academic failure is a painful reminder that they do not fit the "college bound" mold. Speculating on why their peers dropped out (since interviews with tech prep/STWOA students who had left college were not possible at this stage of the research), we were told most dropped out for financial reasons, not academic ones. Evidently school was hard, but balancing school with other aspects of adult work and family life, were even tougher.

Exploring the Value of Work in School-To-Work. The vast majority of tech prep/STWOA students at both levels worked while attending school. Eighty percent of the high school students held a job or had held a job within the previous year; eighty-eight percent of the community college students fell into this category. Only rarely did students report that school officials helped them find a job, which is an interesting finding given the school-to-work connections implicit in tech prep/STWOA.

In terms of the jobs held, a greater proportion of community college students were working 21 hours per week or more (60%) than high school students (35%). These findings confirm that work is an important part of the lives of tech prep/STWOA students, but wages associated with these jobs were discouragingly low. Nearly half of the high school students reported making $100 or less per week; two-thirds of the community college students said they made less than $200 per week. None of the students at either level made more than $500 per week and very few were over $400. Most students also reported having jobs requiring no special training, though more community college students reported having such training than their high school counterparts. These findings compliment earlier results: As students gain more employment experience and job training, their wages would be expected to rise, which was the case.

Table 5 shows students' responses to several questions about their current job and relationships between school and work. What seems important to recognize is that students' jobs were not entirely fulfilling, neither were they well-connected with other school-sponsored school-to-work opportunities. For example, a sizable proportion of students reported working only because they needed the money (40% high school, 56% community college). Most said they didn't think of working and going to school as a problem, but the further students got in the educational system (certainly when in college), the more they talked about wanting the chance to focus on college, without having to worry about work. Knowing this, along with finding that about half of the respondents disagreed that their job was preparing them to advance to a better position or was related to their future career goals, we came to appreciate the conflicting realities and complexities inherent in students' college and work lives.

Working closely with the schools, some employers offered financial incentives (usually via youth apprenticeships) to encourage students to become involved in tech prep/STWOA, but stipends sometimes complicated students' college-going experiences in troublesome ways. Most disconcerting were comments from students who felt trapped in career majors that no longer interested them; they now realized they had selected a career without thorough research or forethought. Only after having worked and studied in the field had the students learned their career choices were incompatible with their personal interests. Yet, to stay in college, many felt they had to continue on their current path. It seemed to us that the students who felt the most trapped were those who also talked about financial pressures. Since most already held down one or more jobs, working even more posed serious concerns for college retention. Students felt they had to retain employer stipends or end their college careers altogether. Their only option, though not an optimal one, was to stay in school to get the associate degree and sometimes also fulfill a commitment made to an employer to work for a designated time beyond the college degree. Later, the students would pursue further education on their own time and on their own terms.

Further complicating this issue, only half of the students said they could apply what they learned on the job in their classes, but fewer thought the transfer of knowledge and skills flowed the other way, from school to work. Whereas 70% indicated they could apply technical skills on the job, fewer thought they could apply math on the job. This was particularly true for community college students where only 38% agreed or strongly agreed with the statement that they could use math skills learned in school while on the job. Taken together, these findings negate the idea work is a highly educational endeavor for tech prep/STWOA students, but rather a necessity, a fact of life. If more meaningful school-to-work connections are envisioned by tech prep/STWOA proponents, they are not very apparent here.

Having said that, we interviewed students about their most rewarding experiences at school or work. Several students chose a recent work experience; a few spoke about how positive experiences at school and work can be mutually reinforcing. Indicative of this finding, one community college student studying child development explained, "I like working in the child development center with the children and applying what I learn in that environment. I like seeing techniques that I have been taught being put into use". Another community college student studying automotive mechanics said, "I've been able to move out away from home and experience city life and make new friends. Also, I've been able to see progress on the job and I've been able to apply what I've learned at school on the job". A high school business student explained, "At work I have learned a lot and put those experiences toward school. Vice versa I have taken tech prep through school which has given me leadership responsibilities". These comments illuminate potential benefits in connecting school and work, if they can happen for more students

Anticipating how tech prep/STWOA can contribute to future work, one student said, "I do not know the most rewarding experience I have had recently in college or at work [but] I do know the most rewarding experience that I will have in the future. That rewarding experience will be when I get my first start at my ideal career". For this student, it was not so much the rewards of the current job or seeing connections between school and work in the present, but the promise of a better job somewhere in the future.

BEST COPY AVAILABLE

IMPLICATIONS FOR POLICY, PRACTICE AND FURTHER RESEARCH

Thus far, enrollments in tech prep/STWOA have been small, particularly at the community college level, but they are growing (Silverberg, 1996; Stern et al., 1997). Where students are progressing through various academic and career pathways, we have not only the opportunity but the obligation to assess their experiences and outcomes. It is important to understand who the students are and how they are benefiting from various tech prep/STWOA approaches. More attention should be paid to issues surrounding access and opportunity at alternative points of entry to tech prep/STWOA, but also retention at various pivotal transition points along the way. More research is needed to determine if the demographic patterns we observed hold true for the population of tech prep/STWOA students in our sites and elsewhere. Among the many studies that should be done, incidences of participation and retention need to be examined with respect to gender, race/ethnicity, socioeconomic status, and other compelling demographic variables. Policies and programs must be designed to ensure that females and minorities have access and opportunity at both levels, especially the postsecondary level.

Tech Prep/STWOA programs are intended to create alternative pathways to enable more students to access college and good-paying jobs. Undoubtedly, future careers, family and social life will be increasingly complex, enhancing public responsibility to support a more highly educated populace. Thus far, community colleges have been the venue to higher education for most tech prep/STWOA students. Two-year vocational-technical but also liberal arts programs offer the next step beyond high school, and future research will provide data on matriculation patterns of tech prep/STWOA students into these curricula, providing better information about upward mobility options and opportunities. For any of these students, academic and social integration into the community college environment is extremely important or the chances of drop out increase dramatically (Tinto, 1996). Knowing this along with our findings about the precarious nature of students' varied work situations, it seems more important than ever to encourage students to stay in college. Tech prep/STWOA programs need to work aggressively to nurture partnerships to four-year colleges and universities where students can continue their baccalaureate education. Thus far four-year colleges and universities have side-stepped tech prep/STWOA, as they have nearly all other educational reforms. Still, just like any other "college bound" student, students who participate in tech prep/STWOA programs deserve the opportunity to go as far in college as their abilities can take them.

If making plans for college and careers are difficult for most high school students, it can be a torturous decision for tech prep/STWOA students. Part of the challenge in making good decisions about the future is having so limited life experiences in the past. A more important aspect of the dilemma for tech prep/STWOA students is not having a clear understanding of their own potential. Often these students receive mixed messages or worse regarding what they can achieve in college and/or careers. As a consequence, if they choose to pursue higher education at all, the community college becomes their testing ground. With its open door policy, why not give the community college a try? If success happens there, if students really do "fit in" or even "warm up", they realize their dreams of going to a four-year college or university may become a reality. For these students, the educational system has an obligation to provide for upward

mobility, so that transfer from the community college to the four-year institution is more than a promise.

Finally, for nearly a century, educators have debated the appropriate balance between academic and vocational education. Should more emphasis be placed on academics to heighten success in the educational system or should the focus be shifted to vocational education to enhance the applicability and utility of what is learned? With so limited data to address such important questions, the jury remains out. However, it appears the tech prep/STWOA approach may do some good for students in providing them with higher level academics and linking that knowledge more carefully and creatively to career preparation. It may go a long way in breaking down the destructive distinctions too frequently made between vocational/terminal and liberal/transfer education. On the other hand, the real benefits of tech prep/STWOA are still unclear. Research is needed to determine the impact of school-based curricular reforms as well as work-based learning. Much more should be known about how students access school and work, and how these are linked to short- and long-term career goals. With that information, the nation will be better positioned to reform education for the 21st century.

References

Boesel, D., Rahn, M. L., & Deich, S. (1994, July). *Final report to Congress, Volume III, Program improvement: Education reform.* Washington, DC: U. S. Department of Education, Office of Educational Research and Improvement.

Bragg, D., Layton, J., & Hammons, F. (1994, October). *Tech prep implementation in the United States: Promising trends and lingering challenges* (MDS-714). Berkeley, CA: National Center for Research in Vocational Education, University of California at Berkeley.

Bragg, D. (1995). Linking high schools to postsecondary institutions: The role of tech prep. In W. N. Grubb (Ed.), *Educating through occupations in American high schools* (pp. 191-211). New York: Teachers College Press.

Bragg, D. (1997, January). *Educator, student and employer priorities for tech prep student outcomes* (MDS-790). Berkeley, CA: National Center for Research in Vocational Education, University of California at Berkeley.

Bragg, D., Puckett, P., Reger, W., Thomas, S., Ortman, J., & Dornsife, C. (1997, December). *Tech Prep/School-to-Work Partnerships: More trends and challenges.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Bragg, D., & Dornsife, C. (forthcoming). Community college and beyond: How tech prep/school-to-work affects students. *Centerwork, 1*(9).

Brodsky, S., Newman, D, Arroyo, C., & Fabozzi, J. (1997, October). *Evaluation of tech-prep in New York state.* (1997, October). NY: New York State Education Department, Bureau of Post-Secondary Grants Administration, Project No. 8080-97-0082.

Brown, C. (1997, January). Answers to common questions about tech-prep programs and identification and coding of tech-prep students. Lufkin, TX: Region V Education Service Center.

Brint, S., & Karabel, J. (1989). *The diverted dream.* New York: Oxford University Press.

Clark, B. (1960). *The open door college: A case study.* New York: McGraw-Hill.

Clark, B. (1980). The cooling-out function revisited. *New Directions for Community Colleges*, no. 8. San Francisco: Jossey-Bass.

Dougherty, K. (1994). *The contradictory college.* Albany, NY: SUNY Press.

Grubb, W. N. (1995). *Education through occupations in American high schools. Vol. I. Approaches to integrating academic and vocational education. Vol II. The challenges of implementing curriculum integration.* New York: Teacher's College Press.

Grubb, W. N., Badway, N., Bell, D., & Kraskouskas, E. (1996). *Community college innovations in workforce preparation: Curriculum integration and Tech Prep.* Mission Viejo, CA: League for Innovation in the Community College, National Council for Occupational Education, and National Center for Research in Vocational Education, University of California at Berkeley.

Harkin, G., Beaulieu, M., Brooks, N., & Cossaro, K. (1996). *Tech prep concept paper.* Washington, DC: U.S. Department of Education, Office of Vocational and Adult Education, Division of Vocational Technical Education.

Hershey, A., Silverberg, M., & Owens, T. (1995). *Diverse forms of tech-prep: Implementation approaches in ten local consortia.* Washington, DC: U.S. Department of Education.

Jennings, J. (Ed.) (1995). *National issues in education: Goals 2000 and School to Work.* Bloomington, IN: Phi Delta Kappa International.

Layton, J., & Bragg, D. (1992). Initiation of Tech Prep by the fifty states. In D. D. Bragg, (Ed.), *Implementing Tech Prep: A guide to planning a quality initiative* (MDS-241) (pp. 4-1 to 4-18). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Merriam, S. (1988). *Case study research in education: A qualitative approach.* San Francisco: Jossey-Bass.

National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform.* Washington, DC: Author.

Parnell, D. (1985). The neglected majority. Washington DC: Community College Press.

Patton, M. (1980). *Qualitative evaluation methods.* Beverly Hills: Sage.

Resnick, L., & Wirt, J. (Eds.). (1996). *Linking school and work: Roles for standards and assessment.* San Francisco: Jossey-Bass.

Silverberg, M., & Hershey, A. (1995). *The emergence of tech-prep at the state and local levels.* Washington, DC: U.S. Department of Education.

Silverberg, M. (1996a). *The continuing development of local tech-prep initiatives.* Washington, DC: U.S. Department of Education.

Silverberg, M. (1996b) *Building school-to-work systems on a tech prep foundation: The status of school-to-work features in tech-prep initiatives.* Washington, DC: U.S. Department of Education.

Stern, D., Finkelstein, N., Stone, J., Latting, J., & Dornsife, C. (1995). *School to Work: Research on programs in the United States.* London: Falmer Press.

Tinto, V. (1996). Persistence and the first-year experience at the community college: Teaching new students to survive, stay, and thrive. In J. N. Harkin (Ed.), *The community college: Opportunity and access for America's first-year students*, (pp. 97-104). Columbia, SC: National Resource Center for the Freshman Year Experience and Students in Transition, University of South Carolina.

Upcraft, M. L., & Gardner, J., (Eds). (1989). *The freshman year experience.* San Francisco: Jossey-Bass.

Urquiola, M., Stern, D., Horn, I., Dornsife, C., Chi, B., Williams, L., Merritt, D., Hughes, K., & Bailey, T. (1997, November). *School to work, college and career: A review of policy, practice, and results 1993-1997.* Berkeley, CA: National Center for Research in Vocational Education, University of California at Berkeley.

Wilson, B. L., & Rossman, G. B. (1993). *Mandating academic excellence: High school responses to state curriculum reform.* New York: Teachers College Press.

Table 1

College and Career Plans for After High School

Plans	Percent of High School Respondents (n=67)	Percent of Community College Respondents (n=57)
Undecided	11%	31%
Enter military service	9%	3%
Work full-time (30 hours per wk or more)	28%	74%
Work part-time (less than 30-hours per wk)	58%	53%
Attend job training program	32%	24%
Attend 2-year comm-technical college	82%	19%
Attend 4-year college or university	70%	83%
Other	4%	24%

Note: Columns do not add to 100% because respondents could select more than one option.

Table 2

Role of Persons Who Helped Most With Future Plans

Role	Percent of High School Respondents	Percent of Community College Respondents
Teacher	27%	14%
Counselor	2%	12%
Family member or guardian	54%	53%
Friend	11%	8%
Work supervisor or co-worker	5%	8%
Other	2%	8%

Note: Columns do not add to 100% because respondents could select more than one option.

Table 3

Level of Preparation to Undertake Future Plans and Confidence in Reaching Ultimate Career Goals

Level	Preparation to Undertake Future Plans		Confidence in Reaching Ultimate Career Goals	
	Percent of High School Respondents	Percent of Comm. College Respondents	Percent of High School Respondents	Percent of Comm. College Respondents
Not at all	2%	2%	9%	0%
Somewhat	18%	10%	28%	12%
Fairly well	31%	22%	35%	31%
Very well	41%	55%	23%	40%
Extremely well	8%	10%	5%	16%

Table 4
Student Perceptions of School-Based Learning Experiences

Statements about Students' High School/Community College Experiences:	Strongly Disagree	Disagree	Agree	Strongly Agree
a. My classes make me think about things that are important to me.....	3% 2%	18% 18%	55% 56%	24% 25%
b. I feel confident that I can apply what I've learned in my classes.....	0% 0%	10% 9%	66% 58%	24% 33%
c. Students in this school have an influence on what is taught.....	6% 14%	35% 27%	50% 52%	9% 7%
d. This school has given me adequate preparation to pursue different options after high school.....	2% 0%	13% 13%	57% 62%	28% 26%
e. My academic teachers apply the course materials to "real world" problems	2% 2%	17% 18%	57% 38%	25% 43%
f. Most of my classes are boring.....	11% 13%	52% 69%	34% 15%	3% 4%
g. I feel most people in this school are interested in my success.....	0% 13%	40% 68%	50% 14%	9% 4%

Note: The upper statistic in each cell shows the percentage of high school students; the lower statistic shows the percentage of community college students. (Rows may not add to 100% due to rounding.)

Table 5
Student Perceptions of Work-Based Learning Experiences

Statements about your current job:	Strongly Disagree	Disagree	Agree	Strongly Agree
1. I have learned new technical skills at my job.....	2% 6%	32% 24%	32% 34%	34% 36%
2. At my job I use math skills that I learned in school.....	9% 12%	25% 50%	45% 22%	21% 16%
3. I'm only working because I need the money.....	8% 6%	53% 38%	36% 30%	4% 26%
4. My job is preparing me to advance to a better position.....	8% 4%	37% 42%	35% 31%	21% 22%
5. My job is related to my career goals.....	23% 20%	39% 28%	25% 28%	14% 24%
6. I can apply what I learn on the job in my classes at school.....	15% 6%	37% 42%	31% 30%	17% 22%
7. My boss has taught me a lot about the job I'm doing.....	6% 6%	11% 30%	55% 44%	28% 20%
8. Working and going to school has not been a problem for me.....	4% 6%	14% 25%	58% 53%	25% 16%
9. My boss gives me a chance to do different kinds of jobs.....	4% 10%	14% 30%	59% 38%	21% 22%

Note: The upper statistic in each cell shows the percentage of hgh-school students; the lower statistic shows the percentage of community college students. (Rows may not add to 100% due to rounding.)

BEST COPY AVAILABLE

Consortium and Site	Area Served	Education & Business/Industry Partners	Student Enrollments	Main TP/STW Model(s) for Program	Other Unique or Primary Features of Programs
Heartland Partnership	Rural	• 12 high schools • 1 regional vo. center • Community College (fiscal agent) • 70 B&I partners (23 worksites for y. apprentices)	Approx. 400 of 4,000 h.s. graduates between 1994-95 and 1996-97 engaged in tech prep; 40 of these involved in tech prep/youth apprenticeships (10% of h.s. grads)	• 4+2 (grades 9-14) • Tech Prep • Hybrid Tech Prep/Youth Apprenticeships • 30 course sequences lead to AAS • 25 comm college classes provide college credit	• TP student leadership org. • Job shadowing opportunities for all 9th grade students (700 students/80 businesses per year) • Faculty and peer mentoring • Benchmarking activities • 1998 Nat'l Tech Prep Award
Midwest Consortium	Urban and metro	• 64 comprehensive high schools • 8 vocational areas • Community College (fiscal agent) • Private University • Over 100 B&I Partners	Approx. 300 of 18,000 h.s. graduates involved in tech prep/STWOA from 1994-95 to 1996-97 (2% of all h.s. grads)	• 2+2+2 (grades 11-16) • Career academy approach • Selection admission of students • Work-based learning approaches offered in selected vocational areas	• Coordination of TP/STW through advanced skills training • Scholarships to support matriculation of students from grade 12 to community college • 1996 Nat'l Tech Prep Award
Southern Partnership	Rural	Approx. 4,000 of 15,000 h.s. grads from 1994-95 to 1996-97 engaged in tech prep/STWOA (25% of all h.s. grads)	• 20 high school and independent school districts (ISDs) +20 high schools outside of CC region • Community College (fiscal agent) • Estimated 2,000 B&I Partners	• 4+2 (grades 9-14) • 7 state-approved TP Articulated Pathways • Over 200 high-school vocational courses approved for college credit • Various work-based learning approaches beginning to be implemented	• Coordinated governance of TP/STW • Extensive use of dual credit • Competency profiles used by teacher and employers • Student follow-up/tracking evaluation process
Sunshine Consortium	Urban and metro	• County school district (fiscal agent) with 18 comprehensive high schools, 1 magnet comprehensive tech. h.s. & 3 adult voc. centers • Community College • 600 B&I Partners	Approx. 350 of 5,800 high schools graduates from 1994-95 to 1996-97 engaged in tech prep/STWOA (12% of all h.s. grads)	• 4+2 (grades 9-14) • Nine broad occup. Areas/35 specific areas of vocational-technical study for tech prep/STWOA • 26 articulated courses of study • Comm college/Tech Prep (CC Prep + Applied Technology) pathway • College Prep/Tech Prep pathway • Various work-based learning associated with magnet technical h.s.	• Dual enrollment/articulated credit • Raised academic requirements in math • Evaluation of student outcomes assessments & combined TP/STWOA evaluation • 1997 Nat'l Tech Prep Award

Figure 1. Summary profiles for six tech prep/STWOA partnerships

Consortium and Site	Area Served	Education & Business/Industry Partners	Student Enrollments	Main TP/STW Model(s) for Program	Other Unique or Primary Features of Programs
Northwest Consortium	Suburban	• 8 school districts/7 high schools • Community College (fiscal agent) • Unknown no. B&I partners	Approx. 1,500 of 9,000 high school grads from 1994-95 to 1996-97 enrolled in tech prep/STWOA (17% of all h.s. grads)	• 2+2 (grades 11-14) • 82 formal articulation agreements in 17 professional-technical strands • Dual credit & adv. Placement readily available • Curriculum integration project linking academic and industry skill standards (federal grant) • Some h.schools engaged in whole-school reform	• Long history with Tech Prep • U.S. Demo. site for Tech Prep • External evaluation site • Strong matriculation from area high schools • Integration of state standards in curriculum • 1992 Nat'l Tech Prep Award
Northeast Initiative	Urban	• 6 high schools; 3 only recently involved • Technical College/ University • Unknown no. B&I partners	Data available on only 3 of the 3 involved high schools shows approx. 10% of graduating seniors involved in tech prep/STWOA from 1994-95 to 1996-97, nearly 440 of 4,000.	• 2+2+2 (grades 11-16) • 3 career pathways lead to associate or baccalaureate degrees: engineering tech., business & communications tech., health & human services • Locally-developed applied academics and emphasis on non-traditional teaching methods • Various work-based learning approaches beginning to be implemented	• Emphasis on h.s. to college transition built into course work • Attention to retention of minorities and special populations • External evaluation of student perspectives and student outcomes • USDE Nat'l Recognition

BEST COPY AVAILABLE

Figure 1. Summary profiles for six tech prep/STWOA partnerships